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ALEXITHYMIA AS RELATED TO THE USE OF LANGUAGE
AND SYMPTOM REPORTING

A Thesis

Presented to

The Faculty of the Department of Psychology
The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree of
Masters of Arts

by

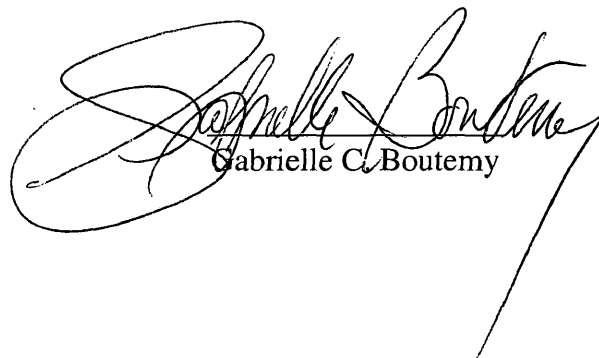
Gabrielle C. Boutemy

2000

APPROVAL SHEET

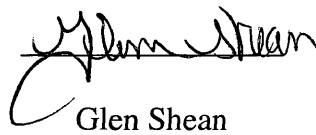
This thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts



Gabrielle C. Boutemy

Approved, April 2000



Glen Shean



Frederick Frieden



Harvey Langholtz

DEDICATION

I would like to dedicate this work to my loving husband without whom this never would have happened. His constant encouragement, support and patience have been the cornerstone on which my graduate education was built. I would also like to dedicate this to my daughter Genevieve who quietly endured my spiritual absence many times. Thank you.

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Abstract

The relationship of alexithymia, as measured by the TAS-20, to emotional linguistic frequencies and somatization was examined. Each dependent variable was analyzed relative to the alexithymia. The first hypothesis examined whether alexithymia was predicted by negative affect word frequencies in a writing task. Initial analysis failed to support this hypothesis. The second hypothesis predicted that alexithymia would contribute significant variance to somatization and symptom reporting, independent of neuroticism. The second hypothesis was upheld by initial analysis. Alexithymia was positively correlated with both somatization and symptom reporting. Two hierarchical multiple linear regression analyses were conducted to assess the amount of variance attributable to somatization and symptom reporting by alexithymia. The first regression analysis indicated that the difficulty identifying feelings, the first subscale of the TAS-20, contributed significant variance, to somatization, beyond that contributed by neuroticism. The second regression analysis found that alexithymia contributed significant variance in addition to that which was accounted for by neuroticism. The second factor of the TAS-20 did not account for significant amounts of variance in either of the regression analyses. It is concluded that ability to identify feelings predicts somatization and illness related symptoms. The role of written affect communication in these relationships was unanswerable due to lack of findings for the first hypothesis.

Alexithymia as Related to the Use of Affective Language and Symptom Reporting.

Introduction

The term alexithymia, derived from the Greek (a = lack, lexis = word, thymos = emotion) meaning “lack of words for emotions”, was coined to describe a cluster of characteristics that have been observed in clinical patients (Nemiah & Sifneos, 1970; Sifneos, 1972; Sifneos, 1973 as cited by Taylor, 1994).

Emotions are innate biological rooted phenomena thought to have three domains: neurophysiological, motor-behavioral and cognitive-experiential. It is this last domain, cognitive-experiential, which encompasses subjective awareness and verbal reporting of feelings, which are thought to be salient to alexithymia (Taylor, 1994). The combined difficulties in these areas, that alexithymics experience, result in problems in interpersonal relationships. Correspondingly, it has been noted that alexithymics are restricted in both expressive gestures and facial expressions and limited in their recognition of posed facial expressions (Nemiah, Freyberger & Sifneos, 1976; Parker, Taylor & Bagby, 1993).

It is thought that, the inability of alexithymics to communicate their emotions results in the inadequate regulation of the neuroendocrine and autonomic nervous systems in response to emotional arousal. Due to the limited subjective awareness and cognitive processing of emotions by alexithymics, somatization disorders may result from the amplification and misinterpretation of sensations that accompany emotional arousal (Taylor, 1994). Consistent with this, Todarello, Taylor, Parker (1995) have hypothesized that due to deficits in the processing of emotions, alexithymics experience states of

“heightened sympathetic arousal” enabling the development of essential hypertension. However, Wise and Mann (1994) examined the relationship between alexithymia and somatosensory amplification, using a 10-item self-report inventory, The Somatosensory Amplification Scale (SSA). This inventory estimates an individual’s sensitivity to normal bodily sensations that are not representative of medical illness. They reported that neuroticism contributed the most variance in predicting somatosensory amplification while alexithymia did not fit the model.

Alexithymia is a stable trait with five components which are consistently observed in clinical settings: a) difficulty describing feelings, b) difficulty distinguishing between feelings and bodily sensations, c) lack of introspection, d) social conformity and e) impoverished fantasy life and poor dream recall. Originally conceptualized as including all these qualities alexithymia has been refined for the research purposes. The current definition of Alexithymia encompasses having difficulty with identifying and disclosing feelings and engaging in externally oriented thinking (Taylor, 1994).

Alexithymia has not only been associated with somatization, including chronic pain, but also with chronic disease (Bagby, Taylor & Parker, 1994; Mendleson, 1982; Todarello, Taylor, Parker & Fanelli, 1995). Mendleson (1982), found that of sixty patients seeking help for chronic pain at a medical clinic, alexithymics exhibited significantly longer histories of chronic pain without being significantly older than non-alexithymics. A study of alexithymia, personality and somatic complaints in college students found the 20-Item Toronto Alexithymia Scale (TAS-20) to significantly correlate to self-report of somatic complaints (Parker, Bagby & Taylor, 1989). Bach and Bach (1995) found that for patients who met criteria for somatoform disorder, high alexithymia

scores predicted persistent somatization. Other research has found Alexithymia at higher rates among hypertensives than in either psychiatric patients or a control group (Todarello, Taylor, Parker, 1995).

In a study examining medically unexplained symptoms (MUS), a topic that includes somatic complaints, Deary, Scott and Wilson (1997), examined alexithymia's contribution to MUS in 244 medical and non-medical subjects. What they found was that a two-factor model (identifying emotion and describing emotion) emphasizing alexithymia best fit their data. The contribution of alexithymia was significant beyond the variance explained by overall negative affect.

Evidence from a pilot study (Boutemy, 1999) suggested that the relationship between symptom reporting and alexithymia might have as its basis something other than lack of emotional communication. Positive correlations between the frequency with which negative affect words were used in a self-disclosure writing task and the TAS-20 approached significance. This suggests that individuals high in alexithymia were able to communicate emotions such as anger, sadness and anxiety. Significant positive associations were detected between alexithymia and self-report of physical symptoms, as well as, between symptoms and negative affect word frequencies. These findings are in conflict with the accepted characterization of alexithymics as having difficulty identifying and describing feelings. Instead, the positive relationship of negative affect word frequencies with alexithymia, and alexithymia's positive relationship to symptom reporting, suggests that mechanisms other than the manifest difficulty in affective communication may be the basis for this.

Oxman, Rosenberg, Schnurr and Tucker (1985) maintain that latent characteristics of a person or group can be inferred from their speech writing and have examined thematic dimensions in writing samples of primary care patients with somatization disorder. Their results indicated these patients differed from those with medical conditions on a number of linguistic frequencies. Somatization disorder patients used significantly fewer space reference words than medical patients, significantly more “urge” words, more “thinking” words, more words from the “equal” category (e.g., am), and more “not” words (e.g., never, not, can’t). Among these it was found that somatization disorder patients used “not” and “I am” significantly more than medical patients. The increased use of “not” and “am” words led the authors to argue that somatization disorder is on a continuum with pathological narcissism and that alexithymia was unrelated to somatization. This argument was based on evidence that the somatization patients were able to express distress well and demonstrate impaired self-esteem, and uncertain self-identity but lacked the ambitiousness, ruthless exploitiveness and need for direct admiration that those with narcissistic personality disorder demonstrate. However, this study did not examine relationships between linguistic frequencies in relation to alexithymia, nor did this study employ a narcissism scale.

In order to better understand the relationship between affective communication, alexithymia and symptom reporting, detailed research is needed. One way to investigate whether language and its use can effect such areas as health is by examining associations between health indices and the content of writing samples. James Pennebaker and his colleagues have been examining just this relationship and have found evidence of an effect of linguistic style and expression on both subjective and objective health. In his

1993 paper, Pennebaker summarizes the findings from a number of studies that employed the traumatic experiences writing paradigm in which participants were asked to write about traumatic experiences in their lives, for 3-5 consecutive days. Pennebaker and Beall (1986) found that participation in the traumatic writing group resulted in reduced health center visits. Pennebaker, Keicolt-Glaser and Glaser (1988) reported enhanced immune function. Suedfield and Pennebaker (1997) found further support for the effects of the disclosure of traumatic events on health. Participants in the negative experience writing group exhibited greater improvement on measures of well-being than did participants in the neutral writing condition.

In a study investigating the impact of emotional expression on the immune system 40 medical students were vaccinated for hepatitis B and then randomly assigned to either an emotionally expressive writing condition or a neutral topic control condition. Participants in the emotional expression condition demonstrated significantly better immune response to the vaccine than the control group (Petrie, Booth, and Pennebaker & Davison, 1995)

In contrast, other research found that the valence of the content differed while the positive effect of disclosure on health remained. First year college students were asked to write about either coming to college or neutral topics. Reductions in health center visits were associated with insightful and causal use of language as previously found, except in this study the increased use of positive words was found to be crucial (Pennebaker & Francis, 1996).

Not all research has substantiated findings of the effect of improved health in relationship to disclosure. A similar study, in which subjects were assigned to either a

traumatic event writing condition or a control group, also found changes in immunological markers. Contrary to previous findings, the control group in this study demonstrated changes in immuno assays while the emotional expression condition remained relatively stable (Booth, Petrie and Pennebaker, 1997).

Based on the above research findings, it follows that better communication, may be reflected in better subjective or objective health. This appears to be evident regardless of whether the level of communication is fundamental to the individual or manipulated. But the questions remain as to which element of expression is involved. Perhaps, rather than difficulty in emotional expression in it's totality, somatization in alexithymics is related to difficulty in one area (i.e., identification of emotions) or the characteristic lack of insight. To the best of this researcher's knowledge, the relationship between alexithymia and health has not been examined in terms of actual use of language. This study will attempt to clarify the type and extent of affective words used alexithymics and to explore the relative contribution of affective communication and externally oriented thinking to symptom reporting.

It is hypothesized that individuals high in alexithymia will use a greater number of negative affect words in a writing task. Specifically, alexithymia, as measured by the TAS-20, will be predicted by negative affective words use as measured by the Linguistic Inquiry and Word Count program (LIWC: Francis & Pennebaker, 1992), in stories written by participants in response to a Thematic Apperception Test (TAT; Murray, 1943), after controlling for neuroticism, as measured by the NEO-N. It is also hypothesized that alexithymia, as measured by the TAS-20, will predict symptom reporting, as measured by the Somatization Subscale (SCL-90; Derogatis, 1977) and a health and symptoms

questionnaire after controlling for neuroticism. External oriented thinking, as measured by externally oriented thinking subscale of the TAS-20, is expected to explain significantly more variance in symptom reporting, than either identifying or describing feelings.

It is important to mention that the independence of the alexithymia construct from neuroticism has been the subject of much discussion. Researchers have found positive relationships between the two (Mann, Wise, Trinidad, & Kohanski, 1995). A study of alexithymia, personality and somatic complaints in college students found neuroticism was significantly correlated to both the TAS-20, and self-report of somatic complaints (Parker, Bagby & Taylor, 1989). Rubino (1993) questions the validity of alexithymia as separate from neuroticism. For this reason, neuroticism will be measured and controlled for in relation to alexithymia.

Method

Participants

Participants were 100 undergraduate student volunteers from the College of William and Mary Introduction to Psychology class. The final sample was 99, one participant failed to complete the materials. Demographics reported are for 69 of the 99 participants. Data was lost due to a disruption of computer equipment. Participants were contacted via electronic mail after participation. As of this writing, 30 participants have not responded. However, the descriptives provided are consistent with the descriptives from other samples of participants at the College of William and Mary. The mean age was 18.93 ($SD = 1.12$) with a range of 18 and 23 years of age. Ethnically, the sample was 53.5% Caucasian ($n = 53$), 9.1% Asian ($n = 9$), 3.0% African American ($n = 3$), 2.0% Hispanic ($n = 2$) and 2% other ($n = 2$). There were no Native Americans in the sample. The sample was predominantly freshman (41%, $n = 41$), with sophomores being the next most frequent group (20.2%, $n = 20$). Juniors comprised 6.1% of the sample ($n = 6$) and seniors 2.0% ($n=2$).

Materials

Means and standard deviations for total TAS-20, each of the three factors; SCL-90R, NEO-N and Symptoms Questionnaire are reported in Table 1. Linguistic means and standard deviations are reported in Table 2.

Alexithymia was measured using the Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1993; see Appendix A), a 20-item self-report measure that employs a 5-

point Likert scale. The TAS-20 has demonstrated good internal consistency reliability (Cronbach's $\alpha = 0.80$) and good test-retest reliability over a three week period ($r = 0.77$). The TAS-20 demonstrated construct validity in relation to the Need for Cognition Scale (Cacioppo, Petty, & Koa, 1990) and the Psychological Mindedness Scale (Conte, Plutchick, Jung, Picard, Karasu, & Lotterman; Bagby, Taylor, & Parker, 1994). The internal consistency reliability estimate was good (Cronbach's $\alpha = .77$).

The overall mean for the TAS-20 was 45.82 (SD = 12.34). This scale is comprised of three factor-derived subscales (see Appendix B). The first factor (F1), difficulty identifying feelings (e.g., I am often confused about what emotion I am feeling) had a mean of 15 (SD = 7.71). The second factor (F2), difficulty describing feelings (e.g., It is difficult for me to reveal my innermost feelings, even to close friends) demonstrated a mean of 11.79 (SD = 4.63). The third and final factor (F3), externally oriented thinking (e.g., I prefer talking to people about their daily activities rather than their feelings), exhibited a mean of 19.05 (SD = 3.67).

Story writing for the content analysis was facilitated by an image from the Thematic Apperception Test (TAT; Murray, 1943; see Appendix C). The TAT, originally a clinical assessment tool, requires the individual to tell a story in response to each image. One of the areas the TAT provides insight into is the affect of the storyteller (Murstein, 1963). One image card was chosen from the original 31 images and a copy was given to each participant. Participants were given a set of instructions (See Appendix D) concerning the writing assignment and a computer disk on which to write their stories.

The Linguistic Inquiry and Word Counts program (LIWC: Francis & Pennebaker, 1992) was used for objective content analysis of writing samples. The average number of

words in each story was 492.42 (SD =189.49). The LIWC counted words denoting negative affect in the categories of anxiety, anger and sadness and words denoting positive affect in the categories of positive feelings (i.e., joy) and optimism. The mean numbers of words were calculated overall for anxiety (M = 2.803, SD = 2.179), anger (M = 2.956, SD = 2.720), sadness (M = 2.202, SD =2.247), positive feelings (M = 2.345, SD = 2.287) and optimism (M = 2.310, SD = 2.262).

Neuroticism was assessed using the NEO Five Factor Inventory Neuroticism Subscale (NEO-N), which is composed of six questions (McCrae & Costa, 1984; see Appendix E). The mean score was 34.23 (SD = 9.60). The NEO-N demonstrated good internal consistency reliability (Cronbach's alpha = .87)

The Hopkins Symptom Checklist 90 Revised (SCL-90R; Derogatis, 1977; see Appendix F) is a widely used and well-validated measure and in this sample demonstrated a Cronbach's alpha internal consistency reliability estimate of .86. The Symptoms of Somatization Subscale, consisting of 12-items and using a Likert scale of between "0 - not at all" to "4 - extremely", was used in this study to assess somatization. The score for this measure is a percentage figure achieved by dividing the sum of the answers by the number of items marked greater than zero. For the purpose of continuity, with the other scales included in the study, the values were presented as ranging between 1 and 5 and were readjusted during statistical analyses. The overall SCL-90 R somatization mean was .563 (SD = .588). Although, higher than the mean of .36 (SD = .42) for an adult non-patient norm sample it is still within one standard deviation of this figure. The mean age for the adult non-patient sample was 46. The mean age for the adolescent non-patient norm sample was 15.6 (SD = 1.12), which is substantially closer

to the average age of this sample ($M = 18.93$, $SD = 1.12$). The mean SCL-90R somatization score for the adolescent non-patient norm sample was .61($SD = .53$), which is more consistent with the mean of this sample.

A questionnaire on individual health developed for this study was also included. The questions were designed to assess self-reported frequency of both organic (e.g., flu) and psychogenic problems (e.g., tingling or numbness of the skin) (see Appendix F). This questionnaire has demonstrated good internal consistency reliability (Cronbach's $\alpha = 0.86$) and good construct validity in relation to the SCL-90R somatization subscale (SCL-90; Derogatis, 1977) ($r = .773$, $p < .000$).

Procedure

Volunteer participants initially completed the TAS-20 as part of an Introduction to Psychology class mass testing cachet. At an orientation meeting written consent of participation was obtained, packets containing the, TAS-20, the NEO-N, SCL-90, the symptom questionnaire, computer diskettes, the TAT image and writing task instructions were distributed. During the meeting the TAS-20 was re-administered, the NEO-N, SCL-90 and the symptoms questionnaire administered and the writing instructions completely reviewed. The participants were instructed that the story was to be approximately 500 words long. Use of spell and grammar check was required for purposes of accurate content analysis. Participants were given one week to complete the assignment.

The instructions for writing the story are as follows:

- I. Imagine that you are one the characters in the picture and use the first person present tense whenever appropriate.
- II. Describe what led up to the event in the picture?

III. Describe what is happening at the moment in the picture

IV. Describe what the characters are thinking and feeling

Statistical Analysis

Internal reliability consistency estimates were computed for each scale. Means and standard deviations for each measure were calculated for descriptive purposes. Content analysis of the writing samples was done using the LIWC program (Francis, & Pennebaker, 1992). Externally oriented thinking was assessed using the third factor of the TAS-20, externally oriented thinking. Pearson product-moment correlations were used to assess associations among the criterion variables; TAS-20 and its subscales, negative affect words and externally oriented thinking, with self-report of symptoms. Of these, the correlations between a) TAS-20 and b) the content analysis data and TAS-20 subscales and symptom reporting were of special interest.

The contributions of negative affect to alexithymia and the contributions of the TAS-20 subscales to somatization and symptom reporting were initially examined using Pearson's Product-moment correlations. Dependent variables were examined in separate hierarchical multiple linear regression analyses. The relationship of the written expression of feeling to alexithymia was not found to be significant in the correlational analysis. The lack of significant correlations did not support conducting the planned regression analysis. Two other hierarchical regression analyses were conducted to determine the amount of variance contributed by the first two subscales of the TAS-20 (ability to identify feelings and ability to describe feelings) to somatization and symptom reporting. The third subscale of the TAS-20 was not significantly correlated with either somatization or symptom reporting and was therefore not included in regression analyses.

Additional exploratory analyses were conducted. A principal components analysis of the factor structure of the TAS-20 was conducted to examine the effect of four ambiguous items on factor loadings. The factors were subjected to a varimax rotation in order to achieve maximal orthogonality. Pearson's Product-moment correlations examined relationships between the newly extracted factor 1 and sad words and somatization. A stepwise linear regression analysis was conducted to assess the variance accounted for by the newly extracted factor 1, number of sad words and neuroticism.

Results

Interfactor Statistical Analysis

Pearson's product-moment correlations were conducted for the consolidated overall alexithymia score and the separate TAS-20 factor derived subscales. Total TAS-20 score was strongly correlated with the first two factors of difficulty identifying and describing feelings as was to be expected: F1 ($r = .885$, $p < .000$), F2 ($r = .836$, $p < .000$). However, the total score was only moderately correlated with the externally oriented thinking factor, F3 ($r = .452$, $p < .000$). F1 was significantly related to F2 ($r = .618$, $p < .000$) but not to F3, indicating that identifying feelings is strongly related to describing feelings but not to externally oriented thinking. F2 is, however, significantly related to F3 ($r = .26$, $p < .001$). This indicates that difficulty in describing feelings increases with externally oriented thinking. Pearson's product-moment correlations are reported in Table 3.

Hypothesis 1

It was hypothesized that alexithymia would be predicted by negative affective words in the writing sample. Pearson's product-moment correlations were calculated to assess the relationship between the variables. There were no significant relationships found to support this hypothesis. Correlation coefficients are reported on Table 3.

Hypothesis 2

Hypothesis two states that alexithymia, specifically externally oriented thinking, will predict somatization and symptom reporting, beyond the contribution of neuroticism.

Table 4 reports Pearson's product moment correlations calculated between the TAS-20 score and its three factors with somatization, symptom reporting and neuroticism.

Evidence was found to partially support the second hypothesis. However, the evidence failed to support the idea that externally oriented thinking would be positively related to symptoms. The overall alexithymia score was moderately related to somatization ($r = .448, p < .000$), symptom reporting ($r = .363, p < .000$) and neuroticism ($r = .396, p < .000$). The first factor of the TAS-20, F1, was moderately related to somatization ($r = .521, p < .000$), symptom reporting ($r = .500, p < .000$) and neuroticism ($r = .526, p < .000$). F2 was significantly but not as strongly correlated with somatization ($r = .337, p < .001$), symptom reporting ($r = .257, p < .01$) and neuroticism ($r = .307, p < .001$) while F3, externally oriented thinking, was not significantly related to any of the three dependent variables of this hypothesis. Therefore, it appears that of the three factors, both the ability to identify and the ability describe feelings are of greater relevance to symptom reporting, than externally oriented thinking.

A hierarchical multiple linear regression analysis was conducted to examine the extent to which difficulty identifying and describing feelings contributed to somatization, independently of neuroticism. The predictor variables were entered in the following order: (1) neuroticism; (2) F1, difficulty identifying feelings; (3) F2, difficulty describing feelings.

Step one of the model, neuroticism, accounted for a significant amount of the variance (30%). Identifying feelings accounted for an additional 8% of the variance but step three of the analysis, ability to describe feelings, did not contribute significant

amounts of variance. Table 5 indicates that the model accounted for 37% of the total variance in somatization scores. Results of the regression analysis are reported in Table 5.

A second regression analysis was conducted to determine the amount of variance neuroticism, difficulty identifying and describing feelings would account for in symptom reporting. The health and symptoms questionnaire used to assess symptom reporting includes questions pertaining to psychosomatic symptoms (i.e., tingling and numbness), organic illness (i.e., cold and flu), fatigue and perception of well-being. The predictor variables were entered in the following order: (1) neuroticism; (2) difficulty identifying feelings; (3) difficulty describing feelings.

Neuroticism accounted for a significant portion of the variance of the health and symptoms questionnaire (40%). Difficulty in identifying feelings contributed an additional 4% significant variance but difficulty describing feelings did not contribute additional significant variance to symptom reporting, apart from the contributions of neuroticism and somatization. Overall, the model accounted for 44% of the variance of the health and symptoms questionnaire. Results of the regression analysis are reported on Table 6.

Taken together the first and second regression analyses imply that the communication of feelings is a predictor of somatization, symptom reporting related to illness, fatigue and perception of well-being. Specifically, the increased difficulty in identifying feelings predicts increased somatization and symptom reporting.

Additional Exploratory Analyses

In addition to the planned analyses, exploratory analyses were performed. Four of the items of the TAS-20 are ambiguous (2, 4, 9, 13). These items could be interpreted as

either physical or emotional in nature. This ambiguity may influence either the factor structure of the scale or its interpretation. To determine whether these four items influenced the factor structure of the TAS-20 a principal components analysis was conducted. Three factors were specified with a varimax rotation to maximize orthogonality.

A principal components analysis three factor solution accounted for 50% of the variance. The first extracted factor, which accounted for 29 % of the variance, was composed of the majority of the items from Factors 1 and 2 of the TAS-20. Indicating that Factors 1 and 2 on the TAS-20 may not be independent in some samples. The items with the strongest weightings on factor 1 include the four ambiguous items, all have loadings in excess of .790. Supporting the suspicion that these four items are confounds in distinguishing identifying from describing emotional and physical feelings. The second and third extracted factors are composed of Factor 3 of TAS-20 split evenly. The second extracted factor accounted for an additional 11% of the variance and the third factor accounted for the remaining 10%. The only remaining original Factor 1 item loaded on the extracted second factor. The results of the principal components analysis are reported on Table 7.

Pearson's Product-moment correlations were conducted. Significant relationships between the extracted factor 1 and sad words ($r = .380, p < .000$) and somatization ($r = .508, p < .0000$) were found. A significant relationship was not found between number of sad words and the extracted first factor.

A final regression analysis was conducted to explore the variance contributed by the use of sad words to somatization. Also included in this analysis was the first factor

from the principal components analysis in order to determine the variance accounted for by difficulty in identifying and describing feelings. Neuroticism was also included. The results indicated that the model accounted for 43 % of the variance and each variable was found to be a significant predictor of somatization; neuroticism ($\beta = .312, p < .001$), derived factor 1 ($\beta = .306, p < .001$) and number of sad words ($\beta = .268, p < .001$). Results are reported on Table 8.

Discussion

The lack of significant findings for the first hypothesis may have resulted from the method used to measure manifest use of language. Writing in response to the TAT image was intended to draw on fundamental propensities for emotional expression. It was hoped that by responding to a somewhat vague image of a young man, a rifle and an apparent ongoing surgical operation, alexithymic participants would express emotions that they may not otherwise have expressed. This approach to obtaining language samples may have been insufficient, however, to induce a range of emotional responses from participants resulting in a lack of relationship between alexithymia and verbal frequencies. Especially since written communication is fundamentally different from verbal communication: more thoughtful and less confrontational.

An alternative method would increase the pressure on participants to respond emotionally. A change in the principal method of investigation from writing task to interview is suggested. Additionally, stronger effects might result from a confrontational interview approach that would provoke participants to elicit stronger emotional responses. This should result in the magnification of participant emotional predisposition. Data gathering should include both audio and video recordings of interviews. Audio recordings would be transcribed for content analysis and video recordings would allow for the collection of data concerning the conveyance of non-verbal emotion. Independent raters would code videos. This change in strategy should not only provide stronger emotional responses but will also increase the data qualitatively. Variables that could be

examined include: time to, duration of and strength of emotional response and ratio of verbal to non-verbal emotional expressiveness. This increase in qualitative data should yield a richer picture of emotional expressiveness.

In hypothesis two, it was predicted that the externally oriented thinking dimension of alexithymia would predict symptom reporting. This prediction was not supported. Rather, higher scores on the first TAS-20 subscale indicate greater difficulty in identifying feelings. The positive relationship between this subscale and the somatization measure implies that greater difficulty in identifying feelings leads to higher scores on the somatization measure and more symptom reporting. However, four of the 20 items on the TAS-20 are ambiguous. These items, in F1 (9, 13) and F2 (2, 4), are neither emotional nor physical in focus (e.g., I am able to describe my feelings easily), while all other items on the scale are clearly either physical or emotional. F1 is made up of seven questions, two of which are physical in nature (e.g., I am often puzzled by sensations in my body), three are emotional in nature (e.g., I am often confused about what emotion I am feeling) and two are ambiguous. The ambiguity of these items could influence the factor structure of the TAS-20. The results of the principal components analysis support this statement. Of the six items demonstrating the strongest loading ($> .790$) all four ambiguous items were present and two of the six items were from the original F2. All of F1 and all but one item from F2 load onto the first component of the analysis thus also demonstrating a lack of independence between describing and identifying items on the TAS-20.

These ambiguous questions introduce the potential for the subscale to yield two different meanings depending on the predisposition of the individual. In scenario one, the ambiguous items could be paired with the physical items resulting in a more somatic

picture, with over half the items skewed toward trouble identifying physical feelings. Scenario two would place the ambiguous questions with the emotional questions thereby skewing the result of the subscale to difficulty identifying emotions. This dichotomy in the scale's potential makes interpreting these data difficult. For example, if skewed toward difficulty identifying physical feelings and paired with a significant relationship with symptom reporting the implications would be that the greater the difficulty describing physical sensations the greater the level of symptom reporting. Although, seemingly non-sensical, interpreted this way the results may indicate a reported confusion over physical sensations leading to somatization. This interpretation would be in keeping with particular items on the TAS-20 (7, 9). However, if the subscale is skewed toward the emotional and paired with symptom reporting it would imply that the greater the difficulty in identifying emotions is related to increases in symptom reporting. This scenario is consistent with the literature discussing the emotional inhibition theory and the "Type C" personality theory (Contrada, Czarnecki, Y& Pan, 1997; Pennebaker, 1993).

As with somatization, the health and symptoms questionnaire was not significantly related to externally oriented thinking but was related to difficulty in identifying feelings. When interpreting these results not only is it important to remember the difficulties associated with F1 but also the essential difference between the somatization measure and the health and symptoms measure. The health and symptoms measure includes not only classic psychosomatic symptoms (e.g., tingling, numbness) but also organic illness (e.g., cold, flu), questions relating to fatigue (e.g., I feel well rested and energetic) and perception of health (e.g., I consider myself a healthy person). The

health and symptoms questionnaire is made up of 15 questions, of these, 6 of the items are duplicates of the somatization measure. Future research using more explicit measures of organic illness might find illness to be predicted by emotional expression. If so this would join accumulating evidence that psychological influences the physical.

Correlations between sad words and neuroticism, somatization and symptom reporting, were unexpected in light of the lack of significant findings for negative affective words and alexithymia. These positive associations may indicate that the relationship between alexithymia and somatization and symptom reporting may not be seated in difficulty of emotional expression, as previously hypothesized. The significant result of the regression analysis examining the ability of neuroticism, sad words and the extracted first factor to predict somatization paired with the lack of significant correlations of the derived factor with sad words, support this conclusion. Had the TAS-20 been recognizing difficulty in identifying and describing emotions it would be expected that the relationship between sad words and the extracted first factor would be negative and have approached significance. The ability of sad words to predict somatization may be explained in the grammatical phenomena of homonyms. Homonyms are words which have the same spelling but different meanings. An example of this would be bear, as in to bear weight or the animal. Although, words such as pain, hurt and ache are not true homonyms the difference between emotional and physical states may be sufficient to induce a lexical differentiation. In addition, emotionally, these words can be used in relationship to events that cause sadness (i.e., I was so sad my heart ached, his death caused me great pain). Therefore the derived first factor may act as an indicator of difficulty in identifying and describing physical feelings, the relationship between

somatization and sad words may be in words like pain, and the lack of relationship between the derived factor and sad words may be the result of the frequency of other sad words (i.e., gloomy, unhappy, melancholy).

The construct of alexithymia is an outgrowth of clinical observations. The collection and analysis of empirical data demonstrating a relationship between manifest verbal expression and alexithymia scales should be an accomplishable task. Nevertheless, what may be associated with scores on a self-report measure may manifest as something entirely different. Should research fail to find empirical to support then, either a re-evaluation of the TAS-20 or a redefinition of alexithymia, may be order. The term alexithymia translates literally into “lack of words for emotions”. This research, however, finds little support for this definition, but rather, finds support for a lack of physical words “alexisomas”. In addition, research examining which items of TAS-20’s subscales are correlated with symptom reporting would be helpful for researchers investigating the relationships between language, affect and health variables. Finally, with the building blocks in place the triangle from language to alexithymia to somatization and back to language might take form.

Table 1

Means and Standard Deviations for the Scaled Variables

| Scale | TAS -20 | | |
|--------------|----------|-----------|----------|
| | <u>M</u> | <u>SD</u> | <u>n</u> |
| TAS-20 Total | 45.82 | 12.34 | 99 |
| TAS-20: F1 | 15.00 | 7.71 | 99 |
| TAS-20: F2 | 11.79 | 4.63 | 99 |
| TAS-20: F3 | 19.05 | 3.67 | 99 |
| SCL-90R | .56 | .58 | 99 |
| Health Q. | 13.54 | 7.94 | 99 |
| NEO-N | 34.23 | 9.60 | 99 |

Note. TAS-20 = 20-item Toronto Alexithymia Scale.

TAS-20: F1 = 20-item Toronto Alexithymia Scale, Factor 1.

TAS-20: F2 = 20-item Toronto Alexithymia Scale, Factor 2.

TAS-20: F3 = 20-item Toronto Alexithymia Scale, Factor 3

SCL - 90R = Hopkins Symptoms Checklist 90 Revised.

Health Q. = Health and symptoms questionnaire.

NEO-N = NEO Five Factor Inventory, Neuroticism subscale.

Table 2

Means and Standard Deviations for Linguistic Variables

| TAS - 20 | | | |
|------------------|----------|-----------|----------|
| Word Type | <u>M</u> | <u>SD</u> | <u>n</u> |
| Positive Feeling | 2.34 | 2.28 | 99 |
| Optimism | 2.31 | 2.26 | 99 |
| Anxiety | 2.80 | 2.17 | 99 |
| Anger | 2.95 | 2.72 | 99 |
| Sadness | 2.20 | 2.24 | 99 |

Note. Positive Feelings (i.e., joy, happy).

Table 3

Pearson's Product-moment Correlations between total TAS-20, Factor 1, Factor 2, Factor 3, and the Linguistic Variables

| Scale | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------------------|---------|-------|--------|-------|--------|--------|-------|------|-----|
| 1. Overall TAS-20 | -- | | | | | | | | |
| 2. TAS-20: F1 | .885*** | -- | | | | | | | |
| 3. TAS-20: F2 | .836*** | .618* | -- | | | | | | |
| 4. TAS-20: F3 | .452*** | .097 | .260** | -- | | | | | |
| 5. Positive Feelings | .114 | .171 | -.022 | .047 | -- | | | | |
| 6. Optimism | .145 | .101 | .183 | .045 | .192 | -- | | | |
| 7. Anxiety | -.040 | .013 | -.120 | -.004 | -.094 | -.028 | -- | | |
| 8. Anger | .141 | .100 | .110 | .122 | -.052 | .091 | .062 | -- | |
| 9. Sadness | .017 | .116 | -.038 | -.146 | .336** | .281** | -.017 | .130 | --- |

Note. Overall TAS-20 = the consolidated 20-item Toronto Alexithymia. TAS-20:F1 = 20-item Toronto Alexithymia Factor 1. TAS-20:F2 = 20-item Toronto Alexithymia Factor 2. TAS-20:Factor 3 = 20-item Toronto Alexithymia Factor 3. Positive Feelings (i.e., joy, happiness).

* $p < .05$

** $p < .01$

*** $p < .001$

Table 4

Pearson's Product-moment Correlations between total TAS-20, Factor 1, Factor 2, Factor 3, SCL-90R, Symptoms Questionnaire and NEO-N

| Scale | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------|---------|---------|--------|-------|---------|---------|----|
| 1. Overall TAS-20 | -- | | | | | | |
| 2. TAS-20: F1 | .885*** | -- | | | | | |
| 3. TAS-20: F2 | .836*** | .618*** | -- | | | | |
| 4. TAS-20: F3 | .452*** | .097 | .260** | -- | | | |
| 5. SCL-90R: S | .448*** | .521*** | .337** | -.015 | -- | | |
| 6. Symptoms Q | .363*** | .500*** | .257** | -.158 | .773*** | -- | |
| 7. NEO-N | .396*** | .526*** | .307** | -.156 | .545*** | .628*** | -- |

Note. Overall TAS-20 = the consolidated 20-item Toronto Alexithymia. TAS-20:F1 = 20-item Toronto Alexithymia Factor 1. TAS-20:F2 = 20-item Toronto Alexithymia Factor 2. TAS-20:Factor 3 = 20-item Toronto Alexithymia Factor 3. SCL-90R:S = Hopkins Symptom Checklist 90

Revised. Symptoms Q = Symptoms Questionnaire. NEO-N = NEO Five Factor Inventory Neuroticism Subscale.

* $p < .05$

** $p < .01$

*** $p < .001$

Table 5

Hierarchical Multiple Linear Regression Model for the Prediction of Somatization from Neuroticism, Factor 1 and Factor 2

| Step and variable | <u>df</u> | <u>R</u> ² | <u>RA</u> | <u>ΔF</u> | <u>B</u> | <u>SE B</u> | <u>β</u> | <u>t</u> |
|-------------------|-----------|-----------------------|-----------|-----------|----------|-------------|----------|----------|
| 1. NEO-N | (1, 97) | .297 | .297 | 41.046 | .033 | .005 | .545 | 6.407** |
| 2. TAS-20:F1 | (1, 96) | .373 | .076 | 11.570 | .25 | .007 | .323 | 3.402** |
| 3. TAS-20:F2 | (1, 95) | .374 | .001 | .117 | .004 | .013 | .035 | .733 |

Note. N = 99. NEO-N = NEO Neuroticism Subscale. TAS-20:F1 = 20-item Toronto Alexithymia Factor 1. TAS-20:F2 = 20-item

Toronto Alexithymia Factor 2. TAS-20:Factor 3 = 20-item Toronto Alexithymia Factor 3.

*** $p < .001$

Table 6

Hierarchical Multiple Linear Regression Model for the Prediction of Symptom Reporting from Neuroticism, TAS-20:F1 and TAS-20:F2

| Step and variable | <u>df</u> | <u>R</u> ² | <u>RA</u> | <u>ΔF</u> | <u>B</u> | <u>SE B</u> | <u>β</u> | <u>t</u> |
|-------------------|-----------|-----------------------|-----------|-----------|----------|-------------|----------|----------|
| 1. NEO - N | (1, 97) | .395 | .395 | 63.318 | .519 | .065 | .628 | 7.957*** |
| 2. TAS-20:F1 | (1, 96) | .435 | .040 | 6.745 | .241 | .093 | .234 | 2.597** |
| 3. TAS-20:F2 | (1, 95) | .438 | .003 | .498 | -.118 | .168 | -.069 | -.706 |

Note. N = 99. SCL- 90R = SCL-90R:S = Hopkins Symptom Checklist 90 Revised Symptoms. Health Q = Symptoms Questionnaire.

TAS-20:F1 = 20-item Toronto Alexithymia Factor 1. TAS-20:F2 = 20-item Toronto Alexithymia Factor 2.

** $p < .01$

*** $p < .001$

Table 7

Three Component Analysis of the TAS-20

| | Component | | |
|----------|-------------|--------------|-------------|
| | 1 | 2 | 3 |
| Item 6 | .812 | .052 | -.009 |
| Item 2* | .807 | .129 | -.010 |
| Item 9* | .804 | -.141 | -.124 |
| Item 1 | .798 | .145 | .123 |
| Item 13* | .797 | .053 | .036 |
| Item 4* | .794 | .149 | .186 |
| Item 11 | .686 | .270 | .165 |
| Item 14 | .683 | .029 | -.076 |
| Item 3 | .676 | -.099 | -.030 |
| Item 12 | .472 | .367 | .123 |
| Item 7 | .293 | .051 | -.034 |
| Item 19 | .052 | .712 | .130 |
| Item 15 | .049 | .639 | .117 |
| Item 10 | .076 | .618 | .273 |
| Item 18 | .031 | -.592 | .237 |
| Item 17 | .411 | .506 | .008 |
| Item 5 | -.123 | .146 | .727 |
| Item 20 | .134 | .083 | .672 |
| Item 16 | -.064 | .165 | .588 |
| Item 8 | .102 | -.109 | .566 |

Note. * = ambiguous items. Bold face represents salient loadings

Table 8

Linear Stepwise Regression Model for the Prediction of Somatization from Frequency of Sad Words and the Extracted First Factor

| Step and variable | <u>R²</u> | <u>B</u> | <u>SE B</u> | β | <u>t</u> |
|------------------------|----------------------|----------|-------------|---------|----------|
| NEO - N | .428 | .019 | .006 | .312 | 3.282** |
| Extracted first factor | | .180 | .055 | .306 | 3.298** |
| Frequency of Sad Words | | .070 | .021 | .268 | 3.345** |

Note. NEO-N = NEO Neuroticism Subscale.

** $p < .001$

APPENDIX A

Directions: On a scale of 1- 5 please indicate how much you agree with the following statements. There are no right or wrong answers.

- 1- strongly disagree
- 2 - moderately disagree
- 3 - neither agree nor disagree
- 4 - moderately agree
- 5 - strongly agree.

- _____ 1. I am often confused about what emotion I am feeling.
- _____ 2. It is difficult for me to find the right words for my feelings.
- _____ 3. I have physical sensations that even doctors don't understand.
- _____ 4. I am able to describe my feelings easily.
- _____ 5. I prefer to analyze problems rather than just describe them.
- _____ 6. When I am upset, I don't know if I am sad, frightened, or angry.
- _____ 7. I am often puzzled by sensations in my body.
- _____ 8. I prefer to just let things happen rather than to understand why they turned out that way.
- _____ 9. I have feelings that I can't quite identify.
- _____ 10. Being in touch with emotions is essential
- _____ 11. I find it hard to describe how I feel about people.
- _____ 12. People tell me to describe my feelings more.
- _____ 13. I don't know what's going on inside me.
- _____ 14. I often don't know why I am angry.
- _____ 15. I prefer talking to people about their daily activities rather than their feelings.
- _____ 16. I prefer to watch "light" entertainment shows rather than psychological dramas
- _____ 17. It is difficult for me to reveal my innermost feelings, even to close friends.
- _____ 18. I can feel close to someone, even in moments of silence.
- _____ 19. I find examination of my feelings useful in solving personal problems.
- _____ 20. Looking for hidden meanings in movies or plays distract from their enjoyment.

Appendix B



Appendix C

Story Writing Instruction

Please read ALL instructions before beginning

**** After you have written your story:**

- * Please use Grammar/Spell Check

- * Save your story to the diskette as follows

- (1) Save to text

- (2) Name your file t plus your ID#

(t + your initials + the last 4 digits of your social security number)

**** Answer the following questions in your story:**

- * Imagine that you are one of the characters in the picture and use the first person present tense whenever possible.

- * Describe what led up to the event in the picture

- * Describe what is happening at the moment in the picture

- * Describe what the characters are thinking and feeling

- * Describe the out come

Your diskette must be in my box, on the second floor of Millington, by the due date to receive credit

Appendix D

Directions: On a scale of 1- 5 please indicate how much you agree with the following statements. There are no right or wrong answers.

- 1- strongly disagree
- 2 - moderately disagree
- 3 - neither agree nor disagree
- 4 - moderately agree
- 5 - strongly agree.

- _____ 1. I am not a worrier.
- _____ 2. I often feel inferior to others
- _____ 3. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.
- _____ 4. I rarely feel lonely or blue.
- _____ 5. I often feel tense and jittery.
- _____ 6. Sometimes I feel completely worthless.
- _____ 7. I rarely feel fearful or anxious.
- _____ 8. I often get angry at the people treat me.
- _____ 9. Too often, when things go wrong, I get discouraged and feel like giving up.
- _____ 10. I am seldom sad or depressed.
- _____ 11. I often feel helpless and want someone else to solve my problems.
- _____ 12. At times I have been so ashamed I just want to hide.

Appendix E

Directions: Below is a list of problems people sometimes have. Please read each one carefully and circle the number which best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS. Please circle only one response.

1= NOT AT ALL 2=A LITTLE BIT 3=MODERATELY 4=QUITE A BIT
5=EXTREMELY

- _____ 1. Headaches
- _____ 2. Nervousness or shakiness inside
- _____ 3. Repeated unpleasant thoughts that won't leave your mind
- _____ 4. Faintness or dizziness
- _____ 5. Loss of sexual interest or pleasure
- _____ 6. Feeling critical of others
- _____ 7. The idea that someone else can control your thoughts
- _____ 8. Feeling others are to blame for most of your trouble
- _____ 9. Trouble remembering things
- _____ 10. Worried about sloppiness or carelessness
- _____ 11. Feeling easily annoyed or irritated
- _____ 12. Pains in heart or chest
- _____ 13. Feeling afraid in open spaces or in the streets
- _____ 14. Feeling low in energy or slowed down
- _____ 15. Thoughts of ending your life
- _____ 16. Hearing voices that other people don't hear
- _____ 17. Trembling
- _____ 18. Feeling that most people can not be trusted
- _____ 19. Poor appetite
- _____ 20. Crying easily
- _____ 21. Feeling shy or uneasy with the opposite sex
- _____ 22. Feelings of being trapped or caught
- _____ 23. Suddenly scared for no reason
- _____ 24. Temper outbursts that you could not control
- _____ 25. Feeling afraid to go out of your house
- _____ 26. Blaming yourself for things
- _____ 27. Pains in your lower back
- _____ 28. Feeling blocked in getting things done
- _____ 29. Feeling lonely
- _____ 30. Feeling blue
- _____ 31. Worrying too much about things
- _____ 32. Feeling no interest in things
- _____ 33. Feeling fearful
- _____ 34. Your feelings being easily hurt
- _____ 35. Other people being aware of your private thoughts
- _____ 36. Feeling others do not understand you or are unsympathetic
- _____ 37. Feeling that people are unfriendly or dislike you
- _____ 38. Having to do things very slowly to insure correctness
- _____ 39. Heart pounding or racing
- _____ 40. Nausea or upset stomach
- _____ 41. Feeling inferior to others

- _____ 42. Soreness of your muscles
- _____ 43. Feeling that you are watched or talked about by others
- _____ 44. Trouble falling asleep
- _____ 45. Having to check and double check what you do
- _____ 46. Difficulty making decisions
- _____ 47. Feeling afraid to travel on buses, subways or trains
- _____ 48. Trouble getting your breath
- _____ 49. Hot or cold spells
- _____ 50. Having to avoid certain things, places or activities because they frighten you
- _____ 51. Your mind going blank
- _____ 52. Numbness or tingling in parts of your body
- _____ 53. A lump in your throat
- _____ 54. Feeling hopeless about the future
- _____ 55. Trouble concentrating
- _____ 56. Feeling weak in parts of your body
- _____ 57. Feeling tense or keyed up
- _____ 58. Heavy feelings in your arms or legs
- _____ 59. Thoughts of death or dying
- _____ 60. Overeating
- _____ 61. Feeling uneasy when people are watching or talking about you
- _____ 62. Having thoughts that are not your own
- _____ 63. Having urges to beat, injure or harm someone
- _____ 64. Awakening in the early morning
- _____ 65. Having to repeat the same actions such as touching, counting or washing
- _____ 66. Sleep that is restless or disturbed
- _____ 67. Having urges to break or smash things
- _____ 68. Having ideas or beliefs that others do not share
- _____ 69. Feeling very self-conscious with others
- _____ 70. Feeling uneasy in crowds such as shopping or at the movies
- _____ 71. Feeling everything is an effort
- _____ 72. Spells of terror or panic
- _____ 73. Feeling uncomfortable about eating or drinking in public
- _____ 74. Getting into frequent arguments
- _____ 75. Feeling nervous when you are left alone
- _____ 76. Others not giving you proper credit for your achievements
- _____ 77. Feeling lonely even when you are with people
- _____ 78. Feeling so restless you couldn't sit still
- _____ 79. Feelings of worthlessness
- _____ 80. The feeling that something bad is going to happen to you
- _____ 81. Shouting or throwing things
- _____ 82. Feeling afraid you will faint in public
- _____ 83. Feeling that people will take advantage of you if you let them
- _____ 84. Having thought about sex that bother you a lot
- _____ 85. The idea that you should be punished for your sins
- _____ 86. Thoughts and images of a frightening nature
- _____ 87. The idea that something serious is wrong with your body
- _____ 88. Never feeling close to another person
- _____ 89. Feelings of guilt
- _____ 90. The idea that something is wrong with my mind

Appendix F

Directions: On a scale of 0- 4 indicate how often last semester any of the following were true.

0 - not at all,
1- occasionally
2 - often
3 - very often
4--all the time.

- _____ 1. I experienced ringing or buzzing in the ears.
- _____ 2. I had neck or back pain.
- _____ 3. I had bronchitis, cough or sore throat.
- _____ 4. At times I experienced chest pain, fluttering in the chest or a racing heart.
- _____ 5. Dizziness or shortness of breath were problems.
- _____ 6. Episodes of nausea, vomiting or diarrhea occurred.
- _____ 7. I experienced abdominal pain (stomach ache), or constipation.
- _____ 8. I had trouble swallowing or felt like I had lumps in my throat.
- _____ 9. I felt tired, fatigued or lacking energy.
- _____ 10. I felt well rested and energetic.
- _____ 11. I experienced trouble sleeping (insomnia) or slept too much.
- _____ 12. Numbness or tingling sensations were problems.
- _____ 13. I had head colds, flu or sinus infections
- _____ 14. Last semester I had problems with frequent or painful urination.
- _____ 15. I considered myself a healthy person.

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